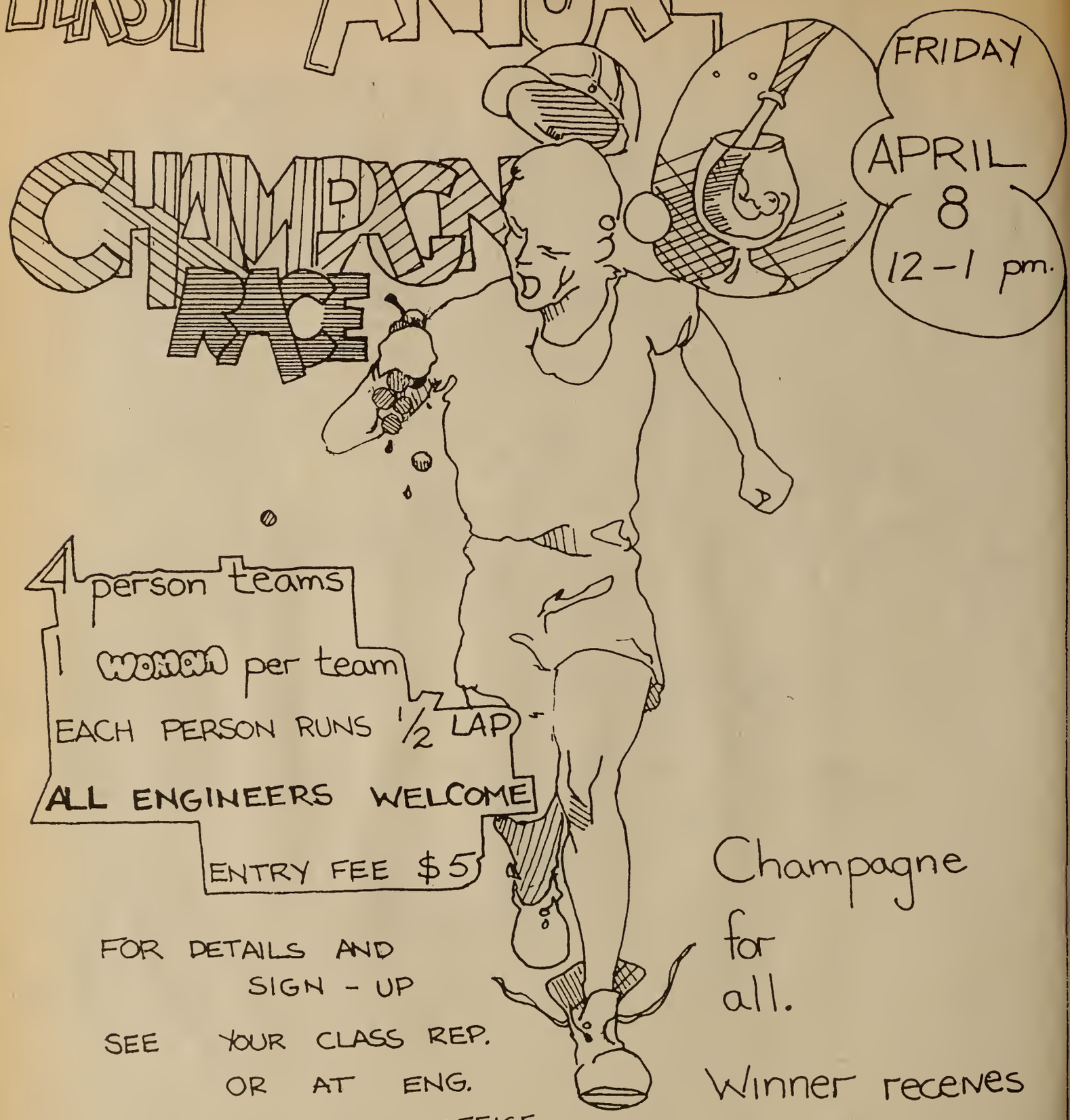
the CANNON

University of Toronto Engineering Society
Volume V, No. 8

OEDC Winners
Faculty Enforces Academic Code

FIRST ANNUAL CHAMPAGNE RACE



FRIDAY
APRIL
8
12 – 1 pm.

4 person teams

1 woman per team

EACH PERSON RUNS ½ LAP

ALL ENGINEERS WELCOME

ENTRY FEE $5

FOR DETAILS AND SIGN - UP

SEE YOUR CLASS REP.

OR AT ENG. SOC. OFFICE

Champagne for all.

Winner receives THE BUBBLE CUP

C'MON OUT

the CANNON

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ARCHIVES
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JD
UofT.100

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Lee Scott

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Belated thanks to Paul Shindman for his article on CED101 in the March issue.

THE CANNON is a publication of the University of Toronto Enginering Society. It is published monthly to announce Eng. Soc. events, discuss Faculty and university matters, and present technical information of interest to Engineering undergraduates. Subscriptions are available, call Ella at 978-2917. Anyone interested in helping with THE CANNON is most welcome.

THE CANNON encourages submissions; please type or write legibly. Deadline for articles is one week before publication date, notices and letters by 5 p.m. the friday prior to publication. Comments on the THE CANNON or articles appearing in it are appreciated. The editors reserve the right to edit letters for brevity.

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The Incidental Fee Evaluated
A year later and the facts remain unclear for many students as to where the money has gone. *The Cannon* gives a detailed view of how each department has spent their money. page10

Faculty Cracks Down on Cheating
Many students have forgotten that it is illegal to copy other people's work. The Faculty office has not. page 12

Engineering Designers Needed
1985 is our centennial. In honour of this event an interesting design project is being organized which may put all those students keen on contributing to its creation in the Guiness Book of Records. page 11

Here Comes the Bubbly!
It's the First Annual Champagne Race - an exciting event for anyone with a hint of spring fever and a strong thirst for the bubbly. page 7

Faculty Refuses Financial Aid for OEDC Entrants
A concerned look at the lack of funding given to competitors in the Ontario Engineering Design Competition. page 7

Skule Victorious
The Ontario Engineering Design Competition proved to be another success for U of T entrants. Skule entries placed in the top three in many categories at the competition in early March. page 5

On the Cover
Fearsome Cannon Guard proceed to entertain those attending the Grad Ball.

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Editor's Notes

It is very tempting to let this editorial become awash in sentimental drivel, this being the last issue under my editorship. As the powers that be have bestowed me with that fine piece of jewelry - the iron ring - I will not have another chance to experience the pleasure (and panic) of presenting U of T engineers with their faculty news. I pass the hat to the next glutton for punishment!

As editor I have had the distinct pleasure in most recent weeks to be informed of a number of impressive events occuring largely because of the efforts of a few dedicated engineering students. One of these events will have a great impact on those students who will return in following years. Due to the engineers public denouncing (and key punch bashing) of our antiquated computer facilities the faculty has now budgeted for a new VAX system to be installed next year. Wayne Levin, past EngSoc President and Paul Shindman, Executive Faculty Council Representative, put a concentrated and commendable effort into forcing the Faculty, and indeed the entire University, to realize and begin solving the problem. Also witnessed were many letters of concern written to campus newspapers from many engineering students. All of these actions presented a cohesive, intelligent, interested, and consequently, effective student body to the Faculty. This type of action brings results.

Another recent event which has proved to favourably distinguish U of T engineers was the Ontario Engineering Deign Competition. Held in Kingston in early March, the University of Toronto was again victorious in many categories. In order to give you an idea of the accomplishments of these students *the Cannon* has published, in this issue, descriptions of the projects which placed in the top three at the competition. However, congratulations must be sent to all those students who entered the OEDC. It takes a great amount of effort, above and beyond the normal school workload, and this effort should be highly commended.

So for those of you who do not have a summer job - start early on your design project for next year's OEDC.

Good luck on exams, good luck recovering from that awesome 'day after the last exam hangover' and fair sailing!

☆ *Congratulations* ☆

1983-84 Eng Soc President: Ron McKenzie

V.P. Activities: Bruce Christie

Engineering Society Award: Peter Weick

Skule Cannon Award: Kathy Dumanski

Presented to graduating students for outstanding contributions during their engineering undergraduate career.

U of T Enters OEDC
Skule Winners

Queen's University was the sight of the Fourth Ontario Engineering Design Competition, held in Kingston on March 5th and 6th. Contestants gathered from all over the province to compete in the four categories for major cash prizes. With the OEDC gaining in popularity and momentum each year, competition was tough, but once again Toronto students made a great showing. Of the many U of T groups participating in the OEDC, four were winners in their respective categories:

1st Place: Entrepreneurial Design Category - Gary Ito (Chem 8T3)
'A Disposable Gas-Powered Miniature Drug Infusion Device'

2nd Place: Corporate Design Category - Paul Blom (Mech 8T4), Gary Cameron (Ind 8T5)
'A Self Pumping Solar Domestic Hot Water Heater for Ontario Hydro'

3rd Place: Corporate Design Category - Joseph Lee, Chi Ho Cheng, Simon Choy, Yan Kit Cheng (Elec 8T4)
'A PBX Continuity Tester for Bell Canada'

3rd Place: Explanatory Communications - George Barnett (Eng Sci 8T4)
'The Undersea Mining of Metallic Massive Sulphides'

U of T can take particular pride in Mr. Gary Ito, who, in addition to the Northern Telecom Award, was presented a special award by the Canadian Industrial Innovation Centre for the competitor demonstrating outstanding entrepreneurship. All the entries were extremely well done and special thanks goes out to all those who participated in this event.

All interested students should take note that next year's OEDC is being hosted by the Waterloo Engineering Society, and we can only look forward to a competition that has been as well organized and hosted as this year's has been.

Descriptions of the award-winning projects follow on the next pages.

AutoInfusion
Gary Ito

Today, for the most part, the administration of bio-active compounds and drugs is carried out in the form of injections, tablets or ointments. However, their effect is relatively short and the drug must be taken again within several hours. This results in peaks and valleys in the blood drug level.

Therefore, in recent years, a major portion of the investments by the pharmaceutical industries has been directed towards the development of new approaches to the optimal delivery of existing drugs rather than the discovery of new ones. This refocusing of priority has resulted in a number of innovative drug delivery systems which release the drug at an extremely low, but constant rate.

This project described the design, fabrication, and testing of a drug infusion device, called the Autoinfusor, which administers the desired drug in the following way. The vapour pressure of a low boiling liquid is used as a power source to compress a flexible reservoir containing the drug. This compression results in the drug being expelled from the reservoir, through a filter and flow moderator to the target site. In vitro studies show that the autoinfusor is able to maintain a zero order rate of delivery for over 96 hours.

The novelty of this device lies in its simplicity, variability and applicability. The simple, multi-purpose infusion pump is very easy to fabricate and, thus, should be most attractive for later large scale production. This low-cost infusion pump is intended for use by the general population. Therefore, dependability in its function and reproducibility in the flow rate are two important features that must be built in because no special training is expected on the part of the user. For these reasons, much emphasis must be placed on the meticulous designing of the device.

Another advantage of this infusion device is that it can be used in a variety of ways. It may be used outside the body or implanted subcutaneously inside the body. For applications outside the body, the drug may be administered simply by absorption through the skin or by way of a fine needle puncture for more direct delivery. When used as an implant, a catheter can be attached to the flow moderator for delivery of the drug to a specific target site.

Finally, a multitude of different drugs may be used in this type of infusion device. Particularly of interest are those drugs that must be administered over a long period of time. Examples include scopolamine for motion sickness, heparin which is an anti-coagulant, nitroglycerine for relief of angina pectoris in heart patients, morphine for pain-killing in terminally ill cancer patients and steroids for birth control.

According to recent statistics published by the Department of Industry, Trade and Commerce, Canada's health care products industry is totally dependent on foreign sources with an annual market value of over $2 billion. Clearly, there is a distinct need of emphasis in the technical advancement in the biomedical engineering field, so that Canada can become less dependent on foreign technology and supplies.

The Vapour Bubble Lift
Paul Blom, Gary Cameron

This self-pumping solar domestic water heater (SDWH) is a semi-continuous device for the passive *downward* transport of heat energy. Incident solar radiation reaches the outer surface of a collector and is then transmitted through to a copper backplate. On the backplate, freon is allowed to circulate within the copper tubing, effectively serving as a heat sink for all heat energy. Eventually, it attains sufficient internal enthalpy to overcome both the hydrostatic head of all fluid above and the intermolecular surface tension, resulting in localized bubbling. Buoyancy effects propel the newly created bubble upward toward the top of the collector. A pressure differential is created between the vapour-liquid combination in the collector and that of the cooler, more dense liquid in the line entering the collector from a reservoir below. The combination of the buoyant forces and the pressure differential force effectively creates a circulation force around the system transferring radiant energy from the collector through a separator to the reservoir and back to the collector.

Bell PBX Continuity Tester
Joseph Lee, Chi Ho Cheng, Simon Choy, Yan Kit Cheng

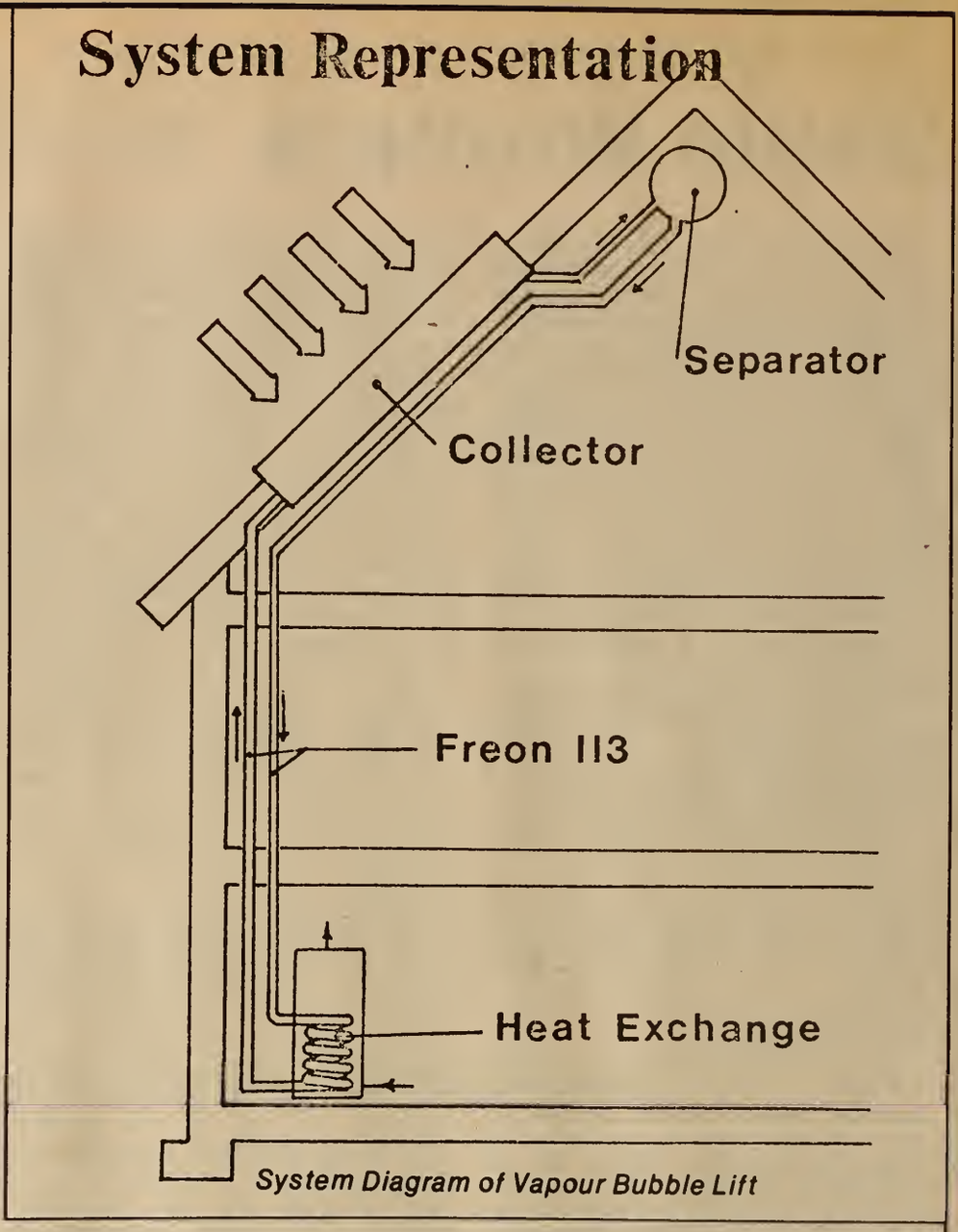
This project is to design a Private Branch Exchange (PBX) Continuity Tester which is required by Bell telephone company. The tester is used to check the condition of

telephone lines used for the PBX system. It is especially used to indicate the presence of voltages in the line. Two LEDs are employed to show whether the input voltage is A.C.,D.C., or both. When one LED is on, a D.C. voltage is at the input; when both LEDs are on, an A.C. or both A.C. and D.C. voltage is at the input. Furthermore, if both LEDs are off, the line must be suffering from open-circuited or shorted-circuited to ground problems. These problems are not desirable since it affects the efficiency of transmitting information which is the theme of the PBX system.

The next problem we have to cope with is the wide range of voltage that may exist at the input. The tester will respond to an input voltage as low as 2.3 V and withstand voltages as high as 200 V. A current limiter is exploited in the design to control the current flowing through the LEDs preventing them from burning out. The operating range of the design covers the range specified by the Bell telephone company. The ball-point-pen size of the probe makes the probe easy to be carried. No extra power supply is needed for the operation of the tester and this makes the device more convenient to be used.

The material we have used in this design are all solid state materials which are reliable and long-lasting. If no critical damage is done to the components, the device will function for many years.

Finally, the cost of the tester is only $7.00 which is much lower than the specified cost of $100.00. It is, therefore, reasonable and feasible for the manufacturer to mass produce the tester.



System Diagram of Vapour Bubble Lift

Undersea Mining of Metallic Massive Sulphides
George Barnett

The Earth's crust can be thought of as a series of rigid plates, rimmed by a network of ridges, a 72,000 kilometre long mountain range, most of which lies beneath the sea. Each rift, or section of the network, is a site of tectonic struggle, a mammoth tearing apart of two or three plates. Where the plates are separating, a phenomenon known as sea floor spreading, molten rock emerges from deep within the Earth, filling the fractured border created by the outward motion of the plates and spilling onto the sea floor as lava.

In 1976, a group of ocean-oriented American, French, and Mexican earth scientists convened in California to investigate newly available capabilities for studying the ocean floor. The group became known as the Rivera Submersible Experiments (RISE) Project Group, and their first dives with the submersible ALVIN, from the Woods Hole Oceanographic Institute, occurred in 1977. Diving off the coast of Ecuador near a region of sea-floor spreading, they discovered an intriguing system of hydrothermal vents along with never before seen community of deep-water life forms. The resulting increase in scientific interest has encouraged further dives by many groups each year.

Each dive has been an adventure, revealing even more secrets of these regions where the ocean crust is forming. A major discovery emerged in 1979 when the first deposits of metallic sulphides were observed at the 21N latitude location off the west coast of Mexico. Subsequent dives have added several other sites of mineral deposition, including a 25 million ton deposit of copper and iron sulphides east of the Galapagos Islands. Attention is now being focussed on these as potential sources of economic mineral deposits, including the presently-discovered deposits of copper, zinc, silver, and crude oil. Only seventy-two kilometres out of nearly seventy-two thousand kilometres of oceanic ridges, or 0.1%, have been explored. Clearly, the remaining unexplored ninety-nine percent represent a frontier for the earth sciences. This paper investigated the technological, economic and geologic implications of the recovery of these ocean-floor deposits, and the effect this will have on the present system of land-based massive sulphides mining.

First Annual Champagne Race

Flash!!!

It's the talk of the Engineering Society, University of Toronto, and even Metropolitan Toronto. On Friday, April 8 at high noon, the attention of many will be focussed on KING'S COLLEGE CIRCLE at the heart of the University of Toronto. This will be the battleground for the very first Champagne race.

The race is open to all engineering students. Briefly, the race will be run by engineering teams with each team consisting of four runners, at least one of which is female. The race is of a relay nature; each member running 1/2 lap of King's College Circle. On race day, the teams will arbitrarily be divided into heats. 'the winners of each heat will race against each other to determine who will walk away with the ultimate symbol of Skule spirit - the coveted Bubble Cup Trophy.

The male members of each team must be within the same class, ie. same year and discipline. The female member may be from a different year but the same discipline. Frosh teams must consist of students in their first year, but from any group letter.

Entries must be in by Noon, Thursday, April 7!!

The entry fee is $5 per team and should be given to Ella in the Eng. Soc. office either directly or through your class rep. The office is located in the Sir Sandford Fleming building, room B670. The team captain's name will then be put on the chart located in the Eng. Soc. office. These names win be drawn from the cup on race day to determine the heats.

Every, yes, every team receives a bottle of champagne for entering. Heat winners receive additional quantities. The members of the runner-up and winning teams will each receive an additional bottle. Prizes are made possible by the support of the Eng. Soc. and the $5 entrance fee.

The idea of the race was instigated by the third year civil engineering class - the team members of which are shown in the photograph. These Civils want this race badly, and they are challenging all other years and disciplines to try and take it away. Enter a team and show them who is boss!

Civil 8T4 Team for Champagne Race

Lack of Support for OEDC

Paul Blom
Mech 8T4

Several weeks prior to the OEDC, Paul Blom and Gary Cameron began their search for funding from within the University of Toronto. It was revealed to them quite early that the Engineering Society was not willing to financially support them in any way with their design and prototyping of a new self-pumping domestic solar water heating system. The obvious answer was a trip to the offices of the Engineering Alumni Association. After all, once the alumni heard of the introduction of this year's $100 incidental fee, they responded with record contributions to the Alumni Association. Yet, it seems that the people involved in handling these coffers have accepted a somewhat odd set of priorities. Funding was of course readily available for social events-coffee, donuts, stage bands and even plane tickets to Vancouver, yet when it came to the prototyping of an engineering design no contribution whatsoever could be justified. Such irresponsibility in the handling of supposedly well-founded contributions would certainly be viewed by engineering graduates from the University of Toronto as disgraceful. And what are the undergraduates supposed to think when one day they too are asked to contribute to the Alumni Association? Will their donations also be mismanaged?

After weeks of delay, funding from the Alumni Association was flatly denied. From here the Dean of Engineering was consulted, and yes, it was merely a continuation of the Royal Snowjob. Sure, he was proud to boast of the design competition victories, but of possible funding: Forget it!

All in all, the search for funding had turned into 'a mere pissing contest'. The entrepreneurs were caught facing into the wind.

President's Message

Ron McKenzie
1983-84 Eng Soc President

The engineering society is a diligent group of workaholics who derive pleasure out of punishment; or is it punishment?

The question raised by many engineering students is 'What does the Engineering Society do for me?'. To try and answer this question would require a master of coit and intelligence in order to keep you awake during such a long-winded explanation. In short, the society exists to provide social and professional events for your entertainment and educational needs. Part of the art of being an engineer involves teamwork in developing a solution to a problem (and I do not mean copying problem sets!). The Engineering Society opens this channel of communication and allows those involved to gain the most important aspect of engineering training, the abiltiy to work with others.

The key to providing services to all undergrads is through proper allocation of duties and increased communication to the members of the Society (that's you). This will place a greater sense of responsibiltiy on all class representatives, and as a result, I believe there will be an increase in Society involvement. The other area I am attacking is to increase your knowledge of 'who is who' in the Society. If you have any questions or comments on what is happening in the Society, stop and ask me; my door will always be open.

At the time I am writing this article the various committee chairmen are being elected by members of each committee. The turn-out for these meetings is incredible. I have never seen so many new faces! The response is a very promising sign, but it must be continued throughout the year. Also, at this time, your Vice-President of Activities, Bruce Christie, is preparing the timetable for Oriantation. If you are interested in helping out with this memorable event, sign up on the list posted on the EngSoc door. We are always in need of new people and new ideas.

Since the joint council meeting (when the newly elected executive took office) many events have taken place. On Saturday March 26, we presented a donation of $1000 to the Easter Seals campaign and are preparing to donate $1000 to the Rape Crisis Centre. These donations are decided upon by the Donations Committee and are designed to show that the needs are recognized by engineering students and that we are concerned with problems inside and outside of our university community We will also be setting up a sound system in the Sandford Fleming cafeteria so that music can be provided during the Friday afternoon pubs. This will hopefully encourage people to use the facilities, to meet and socialize with fellow students. On Friday April 8th we will presenting the First Annual Champagne Race , details of which are given in this issue of the Cannon. This event is designed to release 'spring fever' before the onslaught of exams.

In future, I hope to work with the Faculty in the allocation of courses to use the new VAX 780 which has been budgeted thanks to the active efforts of Mr. Wayne Levin. But this system will far from solve all the problems of inadequate computer facilities; the fight will not stop until the needs have been recognized and fulfilled. As for the system used by F!rosh, it has been scheduled to move into 24 hour operation. This is a great step for a system which has been in active use for only one year. I also look forward to active representation on COPOUT (Council of Presidents at U of T) and with SAC. The potential of this group is unbounded if the representation is properly organized.

In closing I would like to say that you will be seeing one of these reports in every *Cannon*. I want to do everything possible to see that you will know what is going on and how to get involved. On behalf of the elected council and myself, we are looking forward to the 83/84 year and are prepared to make it responsible, eventful and most of all memorable.

Ron McKenzie, EngSoc President Elect is seen here enjoying his luxurious office environment

Eng Soc News

Last month the Engineering Society elected its five offices for the 1983-84 term of office. The postions of President and Vice-President of Activities were contested while the Vice-President of Administration, Treasurer and Secretary were acclaimed. Class representatives to the Engineering Society Council and Faculty Council were also elected from the second and third year classes. First year students will elect their reps in the fall. Have you ever wondered how this bureaucracy called the Engineering Society works? Maybe this will help you.

It may seem complex at first, but on closer examination it becomes quite simple.

Each person, or group of people, is responsible to the group above, ultimate responsibility lying with the President: All levels of the organization are responsible to the rest of the Engineering Society Council, and through the class reps, to the Society at large.

President
Ron McKenzie

As in most organizations, the President is responsible for nothing in particular, but for everything in general. Primarily, the President coordinates the efforts of those under him. He is a voting member of all Standing and Special Committees of Council, and represents the Society on all suitable occasions. He is a member of the Council of Presidents at U of T (COPOUT) and of Faculty Council. In essence, the buck stops here: problems affecting the Society from within or without are the responsibility of the President.

VP: Admin.
Andrew Alberti

The Vice-President Administration is second in command and assumes the President's responsibilities in his temporary absence. He is responsible for all financial and business affairs of the Society, such as its insurance policies, its paid employees, and the Engineering Stores. In conjunction with the Treasurer and the Executive Committee, he prepares the Society's operating budget. The Vice-President Administration is also a voting member of all the Committees of Council.

VP: Activities
Bruce Christie

The Vice-President: Activities coordinates the work of the Standing and Special Committees of Council, the Affiliates (the Engineering Athletic Assoication and the course clubs), and the Faculty Council reps, through the Executive Faculty Council Rep (EFCR). He oversees "all cultural, technical, educational, athletic, and social activities of the Society".

"Skule Spirit" is largely his department, and his work is most visible through events such as Orientation Week, Godiva Week, the Band, and the BFC. He is third in command, and is also a voting member of all Standing and Special committees of Council.

Treasurer
Greg Dow

The Treasurer must keep the financial books of the society, in accordance with legal requirements. He is responsible for informing Council of its financial status, and must submit the Society's books for audit at the end of the fiscal year.

Secretary
Alla Linetsky

The Secretary keeps the records of the Society, its minutes and archives. He is responsible for the business of Council, such as reserving Council chambers for meetings, notifying members of meetings, and the like.

Council

Most of the work of the Council is done by the appropriate committee. As shown in the diagram, there are nine standing committees, each responsible for a specific area of Society activity. Every class rep is required to be a member of a committee, although response to this requirement is generally poor. Special committees are created by Council when a specific need arises.

Faculty Council

Student representatives also have seats on Faculty Council, the administrative body of the Faculty of Applied Science and Engineering. One Faculty Council rep, usually a senior student, is appointed Executive Faculty Council Rep. He is in charge of the student reps, and is the official liason between the Engineering Society Council and the Faculty Council.

Executive

The five elected officers, the Chairmen of the standing committees, the EFCR, and the chairman of the Affiliates form the Executive Committee of the Society. This corresponds to a parliamentary cabinet, and serves to make most of the policy decisions.

Meetings

Both the Executive Committee and Council meet at least once a month. Other committees meet as often as necessary to conduct their business. Meetings of Council are conducted by a Speaker, appointed from among members of Council, whose job it is to control debate.

Get Involved

Members of the Society who are not elected to Council can still get involved in the Society, as many important positions within the organization are filled by appointment from the Society at large. The editors of Society publications, the BFC chief, the Chief Attilator, the leader of the LGMB, and the student manager of the Engineering Stores are all appointed in this manner.

Society members are welcome to attend meetings of Council or its committees. While they do not have a vote, they do have the right to speak from the floor and make their opinions known, subject to the rules of order of Council as imposed by the Speaker.

Even a brief overview such as this makes the operation of the Society much more easily understood. This organization is a workable one, and it provides for good student representation in the decision making process. Anyone with an Interest can get involved in the Engineering Society. It is, in fact, a manageable bureaucracy.

One Year Later...

The Incidental Fee

Barry Levine
Ind 8T4

As the year draws to a close, chances are pretty good that you're wondering what has happened to the extra $100 you spent this year, known simply as the 'Special Incidental Fee'. While it has met some criticism, generally the feeling has been that this fee is both worthwhile and necessary.

To refresh your memories, the original idea was brought to the Engineering Society council in December, 1981. Following the refinement of the proposal by the Special Proposed Incidental Fee (SPIF) committee, the proposal was passed. It states that the fee shall be collected for a maximum of three years, subject to an annual review by the Fee committee and approval by the Engineering Society Council. In other words, the students have the final say as to the renewal of the fee payment. This re-approval was granted at the council meeting of March 3, following extensive review of the year's expenditures by the Fee Committee. This committee consists of the Department Chairmen, Dean Slemon, Club Chairman, First Year Chairman, and Eng. Soc. President (as chairman of the committee).

According to Dean Slemon, the incidental fee was the basis for a direct alumni appeal, this year being the first time such an appeal has been done. As a result, alumni contributions have increased by 80%, from $115,000 last year to $208,000 so far this year. The number of contributors has increased by about 38%, while the average amount donated per contributor has risen by 41%. So far, only minor expenditures have been made with these funds, including a display case for the honour roll and the set up of an alumni office in the Galbraith building. The objective is to further increase alumni donations by at least 50% so that a major impact will be felt next year by combined donations and incidental fees. Naturally, it is hoped that alumni should be able to contribute at least as much as the students do. If each of the approximately 20,000 alumni donated $100, the $2M generated would alleviate the most significant problem, that of equipment.

Dean Slemon estimates that we presently require $1.2M for equipment, just to do the job right. The equipment budget for the '82-'83 year was $450,000, including the incidental fee allocation to equipment. For the '83-'84 year, the Faculty's budget overall will be slashed by nearly $400,000. Rather than reduce the equipment budget still further, cuts will have to be made in other areas, predominantly in the administrative and academic staff areas.

So where has your $100 been allocated? First, it should be noted that fees are not divided equally among departments. Instead, the funds are allocated in proportion to registration in courses by course weight. In other words, if the Electrical Department teaches a course for Engineering Science students, the Electrical Department receives the allocation. A summany of the expenditures by department can be found in the accompanying table.

The Electrical Department spent a large portion to equip new labs in the Sandford Fleming building including the Microprocessor lab and to purchase some additional equipment that could not have been purchased otherwise. Some lecture notes were also paid for.

The Chemical Department attempted as best as possible to cover equipment, T.A.'s and supplies throughout labs in all four years so that all students could see some benefits from the incidental fee. Lab notes were also reduced from about $12 to zero.

The Engineering Science Department, reserved only a small portion of the fees because most of their courses are taught by other departments. The money received was put towards tutors, photocopies (and fourth year thesis printing and binding of extra copies for reference if left over funds permit).

Almost all of the Mechanical department's funds were spent on equipment as it was felt that students would rather see equipment than supplies. The emphasis was also put on new technology, and as a result, a new computer assisted design course will begin next year. Funds were also spent on robotics, microprocessor units and instrumentation for the heat engines lab.

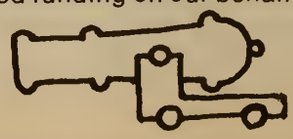
The Industrial Department used primarily for supplies such as course notes, computer cards for undergraduate use, exam booklets, seminar equipment rental and thesis binding (projected). Since much of the equipment is used partly by graduate students, it was decided that 75% of the equipment cost would come from incidental fees, to represent the proportion of undergraduate use. Equipment, both purchased and to be purchased includes Apple terminals and tracking stations.

Rather than attempt to cover all four years equally, the Civil Department concentrated on specific areas in order to make a significant impact, so that a few labs for higher years received exceptional improvements.

As noted in the table, a number of other departments and divisions received funds for courses taught to engineers.

Although it was originally hoped that all years would benefit equally, it was generally felt by the committee that the greater emphasis placed on later years was acceptable since all students would eventually benefit from these improvements. It was also stressed that the emphasis must be made on improvements that otherwise could not occur and to avoid supplementing areas of the department budgets that were previously funded by those budgets. A suggestion was made that greater interaction occur between the Dean, department chairmen and students to deal with various concerns.

On the whole, it was felt that the incidental fee has had a great effect in getting things underway in this important area; however, how things will eventually turn out is still questionable. Before the incidental fee can be claimed totally successful, we will have to see its effect on increased alumni donations and the support of industry, both from the standpoint of donations and from their pressure on government for increased funding on our behalf.



STATEMENT OF INCOME/DISBURSEMENTS
Incidental Fees

Income:	$267,200
less refunds	(3,925)
Total	$263,275

Disbursements:

Dept./Inst.	Teaching/Lab Assistance	Equipment	Supplies	Projected Expenditure	TOTAL
Civil		33,113	14,587		47,700
Geo-engineering		2,000			2,000
Mechanical	2,500	32,830	767	203	36,300
Industrial		1,893	7,157	8,250	17,300
Eng. Science	400		700		1,100
Chemical	9,500	40,800★★			50,300
Electrical		52,000★	20,000		72,000
Metallurgy		9,965	35		10,000
Aerospace		2,900			2,900
Cockburn Centre	2,400★★				2,400
Graphics	4,000				4,000
Geology		6,000			6,000
Comp. Sci.	1,397				1,397
Philosophy	5,000★★★★				5,000
Physics		2,500			2,500
Total	25,097	184,001	43,246	8,453	260,797
% of Total	9.6%	70.6%	16.6%	3.2%	

★ Includes special allocation for the purchase of microprocessor equipment
★ ★ Dept. did not provide breakdown of supplies/equipment. Assumption that most of funds used to purchase lab equipment.
★ ★ ★ for CED101S.
★ ★ ★ ★ First year non-technical electives.

Jobs! Jobs! Jobs!

Engineers Wanted

Gus Rinella
MMS 8T5

What is low, sleek, human-powered and can do 110 km/hr.?
Nothing.
Yet.

As many of you know, the Engineering Society will be celebrating its centennial in 1985. One of the ways we hope to commemorate this event is by sponsoring a design project. It has been decided that we will attempt to break the world land speed record for human-powered vehicles. In other words we're gonna build one fast bike!

The present record of 101.26 km/hr. was set in May 1980 at the International Human-powered Speed Championships at Long Beach, California. A team from General Dynamics designed and built an aerodynamic tricycle that had its occupants sitting back to back. Several universities have built this type of vehicle in the past few years; some successfully. A team from Northwestern University designed the first human-powered vehicle (hpv) to break the American 55m.p.h. speed limit. Their White Lightning earned a ceremonial speeding ticket for the achievement. The latest speed trials, in October 1982, saw a new record set for single man hpv's of 83.52 km/hr. by a London rickshaw operator. A team from M.I.T. did not fare so well with their New Wave. The 11.58m long, 5-man vehicle had trouble handling curves and did not even break the 55 m.p.h. speed limit.

The technical challenge is there. A challenger to the world record must have a very slippery shell that makes good use of ground effects, a chassis that is feather light, strong and rigid, a power train that delivers all (O.K., almost all) effort to the ground and of course a human engine that has been engineered to deliver peak performance. (Are you listening Industrials? Here is a human factors application!) As you can see, an engineering student from any discipline or year can participate in the design. If you do not feel like designing - we will take your body, I mean somieone has got to turn the wrenches! Just think - here is one of those rare chances that you can actually apply what you know to a real life project that has friction, statically indeterminant parts and all those non-ideal situations you have forgotten about.

Interested yet? If not think about how your mind is going to get while mowing lawns, painting porches or driving cabs this coming summer. This project is on a voluntary basis but it will Introduce you to the real problems of putting together a world class design and provide you with experience that future employers might find irresistible.

Faculty Enforces Academic Regulations

Truth or Consequences

Mary Svazic
Chem 8T5

You've just handed in a problem set copies from the class keener, and now you're hastily rewriting a laboratory prep that got 9 out of 10 last year. There's so much to do and it's not easy -- you can't really be expected to do it *all* on your own. Afterall, everyone else is using their "resources," and you don't want to be at a disadvantage. Anyhow, they'll never catch you -- or will they?

In the Faculty of Engineering, it is well-known that a certain amount of copying, cheating, plagiarism, and even stealing takes place, and it is not passing unnoticed. In the past three years, there have been several cases of students who have jeopardized their education by committing academic offences such as falsification of documents, impersonation at an exam, plagiarism, and stealing of a fellow student's work. The Faculty is now taking steps to ensure that engineering students are made more fully aware of the consequences of academic dishonesty.

In the 1982-83 academic year, three cases of plagiarism within the Faculty were brought to the attention of Dean G.R. Slemon and Ass. Dean P.M. Wright. In one case, a student stole a fellow student's laboratory report from the box in which it had been placed to be marked, changed the name on the cover, and handed it in as his own. When this was discovered, the course grade was reduced to 0, punishment which many members of the engineering staff felt was insufficient. Another student attempted to "resubmit" some assignments after the end of the term, arguing that his marks had not been properly recorded during the term. The professor discovered that the work had been submitted earlier in the term by another student and as a result the offender was penalized by having the course grade reduced from 30 to 0. As a consequence, he had to discontinue for some time as his average was below the minimum required to continue in the program. The third case involved an above average student who submitted for credit a computer program which was not his own, without receiving permission from the person who actually wrote it. Although the assignment was worth only two marks, the student had his course grade reduced by 25.

The preceding cases were all handled internally by the Faculty, which is the normal course of action when the accused student admits guilt and reduction of the course grade to zero is the most severe penalty. In the last two years, the Faculty has also dealt with two high school students who falsified their records to gain admission to First Year Engineering. One case was uncovered before the beginning of classes, but in the other, the student had his registration cancelled six weeks before the April examinations.

In the event that a student does not admit guilt or the Faculty desires a penalty more severe than zero for a course, the case is brought before the University Disciplinary Tribunal. The Tribunal is chaired by a lawyer and governed by the Statuatory Powers Act. The decision of whether or not a student is guilty rests with a jury comprised of both students and staff. Two years ago, the Tribunal found an engineering student guilty of having someone impersonate him at an examination. The student was suspended for two years; the impersonator for one year.

Although it has not yet been done, cases involving impersonation and theft of personal property such as reports and assignments could be taken to court as they are criminal offences. In the past, however, the Faculty has found it more appropriate to handle these as academic offences within the University system.

Disciplinary action is frequently carried out privately by individual professors. Professors who uncover plagiarism or cheating among their students will often give a mark of zero for the work in question, or divide the mark by the number of students who did the work, penalties which, according to Dean Wright, are too lenient. Some members of the Engineering staff feel that even the actions taken by the Faculty, although more severe, are not sufficient. "To receive a course grade of zero when the student is probably already failing is not severe enough," says Dean Slemon. He feels that the penalty should be more severe than assigning a mark that the student may well have received had he not cheated.

Dean Slemon also pointed out that the punishment for academic offences at the faculty level is much less serious than that incurred by a practising engineer for similar offences. Professional engineers are governed by a code of ethics, and if found guilty of falsifying documents or representing another engineer's work as their own, would loose their right to practice. Whereas at the faculty level the name of the student is kept confidential and "doesn't appear in the files after a certain period of time." According to Dean Slemon, the Association of Professional Engineers of Ontario publishes the name of the guilty party and the full circumstances of his case.

Dean Wright does not foresee any major changes in the Faculty's procedure for dealing with academic offenders for the time being. This may be attributed to the fact that, according to Dean Slemon, academic offences have "not been a serious problem ... Four (cases) is a lot of this faculty. We are freer of this than most other units of the University." He does, however, concede that the Faculty never really knows how much plagiarism goes on; cases are often found by accident. In addition, it is frequently hard to tell where receiving help from friends ends and copying begins. Perhaps because of this, there has lately been a tendency amoung some professors to assign all marks on the basis of supervised tests.

In the Faculty of Arts and Science, students are now required to present a photo I.D. card before admission to an examination. Although there are no plans to introduce photo I.D. in the Engineering Faculty, it is possible that students may be required to show their student card to exam supervisors. There are also no plans to increase the severity of penalties for offences, despite the feeling within the Faculty that existing penalties are insufficient.

The Faculty hopes to facilitate a reduction of academic offences by making students more aware of the penalties they risk. "The faculty doesn't want to threaten students," says Dean Wright, "but there are cer-

Academic Offences as Described in the APSC Calendar

Academic Offences

In order to protect the integrity of the teaching, learning and evaluation processes of the University it shall be an offence for any member knowingly:

(i) to use or possess unauthorized assistance in any academic examination or term test or to use unauthorized aids or obtain unauthorized assistance in any other form of academic work;

(ii) to represent as that of the member in any academic work submitted for credit in a course or program of study any idea or expression of an idea of another;

(iii) to submit for credit in any course or program of study, without the knowledge and approval of the member to whom it is being submitted, any academic work for which credit has previously been obtained or is being sought in another course which has

(iv) to submit for credit in any course or program of study any academic work containg a purported statement of fact or reference to a source which has been concocted;

(v) to forge or in any other way falsify any academic record of the University or of any academic division of the University or to forge or in any other way falsify any academic record of another educational institution used for the purposes of the University of Toronto, or to utter or make use of any such forged or falsified records;

(vi) to remove books or other library material from a University library without proper authorization, to wilfully mutilate library material or misplace it, or in any way wilfully to deprive other members of the University of the opportunity to have access to library resources;

Sanctions

The following sanctions, listed in order of increasing severity, may be imposed by the Tribunal upon conviction of any offences:

(a) Caution;

(b) Censure;

(c) Assignment of a mark of zero academic work submitted for credit;

(d) Failure in or cancellation of credit for any course or other academic work in respect of which any offence was committed;

(e) Suspension from attendance in all courses in which the student is registered at the time the offence was committed for any period less than twelve months from the date on which the offence was committed and loss of credit for any course or courses which have not been completed or in which no grade or final evaluation has been registered at the time the offence was committed;

(f) Suspension from the University for such period as may be determined by the Tribunal; or

(g) Expulsion from the University.

Reporting

All persons convicted of academic offences under the Code of Behaviour on Academic Matters will have their names included in a report by the Provost to the Academic Affairs Committee.

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tain standards they must live up to." This is the message the Faculty wishes to convey to engineering students as well as to high school students. Deans Slemon and Wright sympathize with students whom they realize are often under great pressure, but they agree that the students must learn how to cope without resorting to cheating or plagiarism. Dean Slemon feels that the greatest problem lies with students who assume everyone else is cheating and they are at a disadvantage if they don't.

The Dean is, nevertheless, not pessimistic: "Undergraduate students are more sensitive to their professional responsibilities now than at any other time since I started teaching." He feels that ethical responsibilities are well-understood by engineering students and that better publicity of the consequences they face for academic offences will show them that the honest person is definitely *not* at a disadvantage.

Jock Talk

Engineering Athletics

Lee Scott
E.A.A. Publicity Director

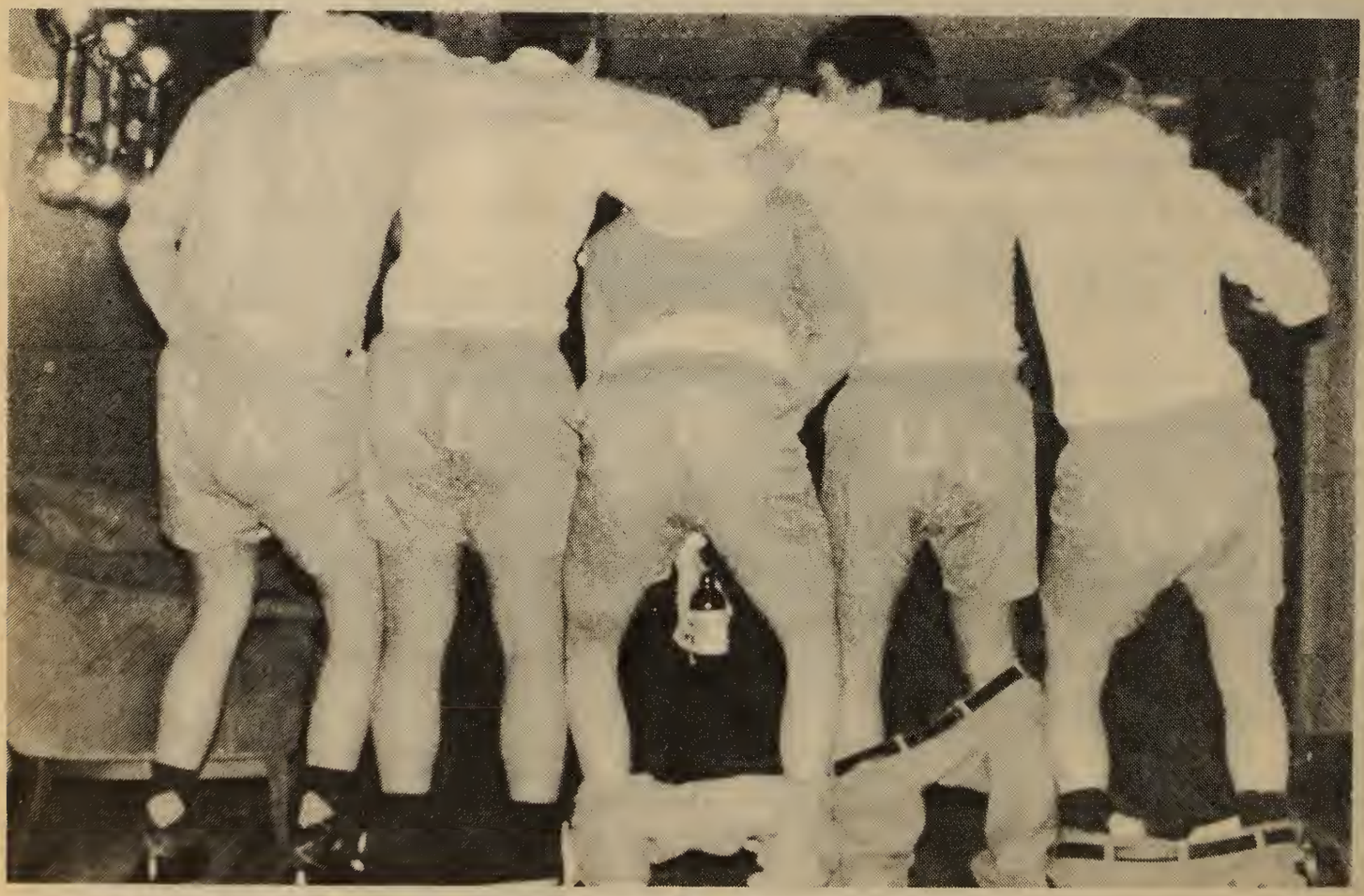
Skule athletes and teams were honoured at the S-Dance which was held at the Plaza II Hotel, Friday, March 25. This annual event was, again, a great success with many people turning out for the awards presentations, food and dancing.

Skule champions this year were the the men's swimteam and the women's ski team. Finalist teams included the men's junior hockey and waterpolo teams and the women's volleyball I, innertube waterpolo teams. All members on these teams received pen and pencil sets engraved with the engineering crest.

Trophies were distributed to each player deemed the most valuable to their team. There were some highlights during these presentations. Oli Cajanek, 6T7 winner of the Special Bronze 'S' and the Sidney Earle Smith Award (intramural male athlete) was present to give out the trophy for the most valuable rugby player to Glyn Jones. Mr. Cajanek donated this trophy to the E.A.A. in 1967 but has never presented it. Up until 1967 there had never been an engineering trophy for rugby. Dale Kerr, 8T2 winner of the Special Bronze 'S' and E.A.A. President, donated and presented a new trophy for the most valuable female aquatic participant. This trophy was won by Pam Selby, Ind 8T3, for the third year in a row and is called the Pamela J. Selby Award. Athird highlight of the presentations were the many most valuable player awards which Colette Taylor, Mech 8T3, won. Colette was selected the most valuable player on the women's basketball, soccer and volleyball teams.

The big award of the evening is always the Special Bronze 'S' Award. This is given to the male and female engineer who has contributed the most to University and Faculty athletics. This years winners were Kathy Dumanski and Greg Scott. Kathy was Director of Women's Athletics for the past two years and E.A.A. President for 1982-83. She has played on every engineering team and has won the Ski meet for the last two years. She was selected the most valuable ice hockey player for the past three years. Certainly a deserving candidate for the Special Bronze 'S'. Greg was the Hockey Commisssioner in 1980-81 and the Director of Men's Athletics from 1981-83. He also played for both the men's junior and senior hockey teams. Congratulations Kathy and Greg!

The Chenille S and the Bronze S were also awarded to Skule athletes at the dance. The Chenille S is given to those people who have accumulated 15 or more athletic points. The Bronze S is given to the graduating students who have totalled 40 or more points over their undergraduate years. Although there



Rugby Players Put on a Show at the S-Dance

Pam Selby, E.A.A. Women's Athletics Director presents Kathy Dumanski and Greg Scott with their Special Bronze 'S' Awards

were no 'letters' given to any F!rosh this year, a record 62 were distributed to members of the fourth year class. There were also 21 Bronze S awards presented. Congratulations is extended to all the award winners and athletic participants who helped make 1982-83 an exciting year.

On the Varsity scene many Skule athletes were honoured at the annual Intercollegiate Athletic Awards Night, held on March 25 at Hart House. The Benson Award, presented to the female student in her graduating year, selected for outstanding ability in Athletics and Scholarship, was awarded to Karen Wright, Chem 8T3. Karen has been an essential member of the Blues rowing team for 3 seasons, helping them to win one OWIAA novice title and two silver medals. She played five seasons of ice hockey, including three championship years in 1980-81-82. This past season Karen was named to the OWIAA all-star team and was voted the most valuable player by her teammates. Karen was also given her Silver 'T', given to Bronze 'T' holders in their graduating year for outstanding athletic performance.

The Kirk Wipper Trophy, awarded to the most valuable member of the wrestling team, was given to Hugh Chaser, Engineering 8T5. The Don Barton Memorial was presented to Marc Bracken, Mech 8T3, as the most improved gymnast. Brett Hennenfent, Mech 8T3 was awarded his Silver 'T'. He was also nominated for the Male Athlete of the Year Award as the leading scorer for the Blues Rugby team which won three consecutive OWIAA championships. Bronze 'T' winners from engineering were Brent Corkum for rugby, Greg Philps for swimming, Andy Jones for track and field, and Marc Bracken for gymnastics.

For those engineering athletes who did not receive their awards at the S-Dance, they can be picked up in the E.A.A. office in the EngSoc offices.

call for 'Labatt's Blue'